



UNIVERSITI PUTRA MALAYSIA

**EFFICIENCY AND PRODUCTIVITY OF THE MALAYSIAN
FOOD MANUFACTURING INDUSTRY, 1983-2000**

ALIAS RADAM

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By

ALIAS RADAM

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

October, 2007



Dedicated to my

beloved wife:

Normala Buang

loving son and daughters:

Mohd Asrul Fahmy Alias

Nurul Ezantey Alias

Nurfarahin Alias

Nurul Ashyikin Alias

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirements for the degree of Doctor of Philosophy

**EFFICIENCY AND PRODUCTIVITY OF THE MALAYSIAN
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Chairman: Professor Mad Nasir Shamsudin, PhD

Faculty: Agriculture

Food manufacturing industry has been the backbone of Malaysia's economic stability and growth for decades. The food-manufacturing sector experiences a rather volatile trend during 1993-2000. Due to emphasis given by the government, the manufacturing sector grew by 9.17 percent per annum in 1993 as compared to the previous year, where the sector contributed 45.8 percent to overall increase in GDP. The rate of annual change increment declined from 7.8 percent in 1994 to 6.0 percent in 1995, and this trend continued till 2000. The annual increment dropped by -2.5 percent in 1998, mainly due to the lack of financial support and capital constraints as Malaysia experienced financial crisis during this period. Evidence such as the value of output, exports, employment

generations and value added revealed significant disparity. This disparity begs the question as to the sustainability the food manufacturing sector under the rapid growth of other sectors. The relevant indicators have include's efficiency and productivity of the sector which provide as the benchmark for performance analysis.

This study aims to examine the performance of the Malaysian Food Manufacturing Industries in terms of productivity and efficiency during the period 1983 – 2000. The non-parametric Data Envelopment Analysis (DEA), approach are utilized to compute the Malmquist Total Factor Productivity (TFP) indices.

The empirical results indicate that only 26.7 percent of the Malaysian food manufacturing industries are closed to the frontier. The average of the technical efficiency of food manufacturing industry increased from 86.5 percent in 1983 to 92.1 percent in 2000. This increase could be due to a gradual narrowing of the gap between the “normal” and “best” practice industries. The average of the scale efficiency of food manufacturing industry increased from 91.8 percent in 1983 to 94.1 percent in 2000 while the average of the pure efficiency of food manufacturing industry increased from 93.9 percent in 1983 to 94.1 percent in the same period.

The findings also indicate that between 1983-2000 the annual rate of TFP growth varied. TFP increased by 2.1 percent in 1985, 0.2 percent (1989), 4.2 percent

(1990), 4.0 percent (1992), 1.2 percent (1993), 0.1 percent (1997) and 1.7 percent (1998). Overall TFP annual growth rate decreased an average rate of 0.02 percent per annum over the entire 1984-2000 period. Results show that the efficiency change and technical change seem to move in opposite direction. The average technical change (TECHCH) declined over the period under study (-0.6 percent per year) and its contribution to TFP growth is largely due to the increase in the efficiency change (0.4 percent per year).

The food manufacturing industries has a strategic role for Malaysia in the context of globalization. The increasing importance of processed food exports when compare with primary commodities confirms this sector as a key component of export growth strategies. At the same time, it was noted that these opportunities are currently heavily concentrated on a limited number of traditional product categories. The empirical estimates of the Malaysian food manufacturing efficiency and productivity performance point to the fact that a greater investment in R&D is needed. To maintain high efficiency, a stable and well-informed environment is called for.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KECEKAPAN DAN PRODUKTIVITI INDUSTRI PERKILANGAN
MAKANAN DI MALAYSIA, 1983-2000**

Oleh

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Industri perkilangan makanan telah menjadi tulang belakang kestabilan dan pertumbuhan ekonomi Malaysia untuk beberapa dekad yang lepas. Industri ini mengalami arah aliran yang tidak menentu sejak 1993-2000. Disebabkan oleh tumpuan yang diberi oleh kerajaan, sektor perkilangan ini berkembang dengan kadar 9.17 peratus setahun dalam tahun 1993 berbanding tahun sebelumnya, dimana sektor ini menyumbangkan 45.8 peratus kepada peningkatan keseluruhan keluaran dalam negara kasar. Walau bagaimanapun, kadar peningkatan tahunan telah menurun dari 7.8 peratus dalam tahun 1994 kepada 6.0 peratus pada tahun 1995, dan arah aliran ini berterusan sehingga tahun 2000. Peningkatan tahunan jatuh sebanyak -2.5 peratus pada tahun 1998, terutamanya disebabkan kekurangan sokongan kewangan dan kekangan modal

oleh kerana Malaysia mengalami krisis kewangan didalam tempoh masa tersebut. Beberapa petunjuk seperti seperti nilai output, eksport, penjaan pekerjaan dan nilai ditambah menyaranakan perbezaan ketara antara industri perkilangan makanan dan sektor lain. Jurang diantara sektor ini telah menimbulkan persoalan sama ada industri perkilangan makanan dapat bertahan dengan pertumbuhan yang meningkat bagi sektor lain. Petunjuk yang sesuai termasuklah kecekapan dan produktiviti bagi sektor yang merupakan penanda aras analisis prestasi.

Tujuan kajian ini adalah untuk menyiasat prestasi industri pembuatan makanan di Malaysia dari segi produktiviti dan kecekapannya untuk tempoh masa 1983-2000. Pendekatan tidak-berparameter 'Data Envelopment Analysis' (DEA) adalah digunakan untuk mengira indek Jumlah Faktor Produktiviti Malmquist (TFP).

Keputusan empirikal menunjukkan hanya 26.7 peratus sahaja industri perkilangan makanan di Malasia hampir disempadan (frontier). Purata kecekapan teknikal industri perkilangan makanan meningkat dari 86.5 peratus pada tahun 1983 kepada 92.1 peratus pada tahun 2000. Peningkatan ini mungkin disebabkan berkuangnya jurang diantara amalan yang "normal" dengan amalan "terbaik" dikalangan industri. Purata skala kecekapan industri pembuatan makanan telah meningkat dari 91.8 peratus pada tahun 1983 kepada

94.1 peratus pada tahun 2000, sementara purata kecekapan tulin industri pembuatan makanan meningkat dari 93.9 peratus pada tahun 1983 kepada 94.1 peratus didalam tempoh masa yang sama.

Keputusan kajian juga menunjukkan diantara tahun 1983-2000 purata tahunan pertumbuhan TFP ada berbagai. Sebagai contoh, TFP telah meningkat sebanyak 2.1 peratus pada tahun 1985, 0.2 peratus (1989), 4.2 peratus (1990), 4.0 peratus (1992), 1.2 peratus (1993), 0.1 peratus (1997) dan 1.7 peratus (1998). Keputusan kajian juga menunjukkan TFP berkurangan dengan kadar purata 0.02 peratus setahun untuk keseluruhan tempoh masa 1984-2000 bagi keseluruhan industri pembuatan makanan. Keputusan kajian juga menunjukkan perubahan kecekapan dan perubahan teknikal kelihatannya bergerak kearah yang bertentangan. Purata perubahan kecekapan teknikal (TECHCH) mengalami arah aliran yang menurun untuk tempoh masa kajian (- 0.6 peratus setahun) dan sumbangan terhadap pertumbuhan TFP adalah disebabkan peningkatan didalam perubahan kecekapan (0.4 peratus setahun).

Industri perkilangan makanan mempunyai peranan strategic didalam kontek globalisasi. Peningkatan kepentingan eksport makanan diproses apabila dibandingkan dengan komoditi utama mengesahkan sector ini merupakan kunci utama strategi pertumbuhan eksport. Pada masa yang sama, peluang ini hanyalah tertumpu kepada beberapa kategori keluaran tradisional sahaja.

Anggaran empirikal keupayaan produktiviti sektor perkilangan makanan di Malaysia menunjukkan pelaburan yang besar didalam penyelidikan dan pembangunan (R&D) adalah diperlukan. Untuk mengekalkan kecekapan yang tinggi, persekitaran yang stabil dan maklumat yang sempurna adalah diperlukan.

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I certify that an Examination Committee met on 30 October, 2007 to conduct the final examination of Alias Radam on his Doctor of Philosophy thesis entitled "Efficiency and Productivity of the Malaysian Food Manufacturing Industries, 1983-2000" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulation 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Putra Malaysia or other institutions.

ALIAS RADAM

Date: 27 October, 2007

TABLE OF CONTENTS

	Page
DEDICATION	ii
ABSTRACT	iii
ABSTRAK	vi
ACKNOWLEDGEMENTS	ix
APPROVAL	x
DECLARATION	xii
LIST OF TABLES	xvi
LIST OF FIGURES	xx
LIST OF APPENDIES	xxii
LIST OF ABBREVIATIONS	xxii
 CHAPTER	
1 Overview of Study	1.1
1.1 Introduction	1.1
1.2 Problem Statement.	1.2
1.3 Objective of the Study	1.7
1.4 Significance of the Study	1.8
1.5 Organization of thesis	1.9
 2 Malaysian Food Manufacturing Industries	2.1
2.1 Introduction	2.1
2.2 Productivity Performance of the Malaysian Manufacturing Sector	2.6
2.3 Structure of Food Manufacturing Industry	2.14
2.4 Institutional Supports	2.19
2.5 Trade Performance in Food Sector	2.22
2.6 Characteristics of Food Processing Industry	2.24
2.7 The Food Processing Industry's Current Status	2.26
2.7.1 Structure of the Food Processing Industry	2.26
2.7.2 Output Composition and Trend	2.30
2.7.3 Value Added	2.32
2.7.4 Employment	2.34
2.7.5 Investment	2.34
2.8 Conclusion	2.38

3 Literature Review	3.1
3.1 Introduction	3.1
3.2 Productivity Concept	3.5
3.3 Traditional Approach to Measuring Productivity	3.9
3.4 Development of Productivity Analysis	3.11
3.5 Overview of Comparative Efficiency Measurement Techniques	3.15
3.5.1 Stochastic Frontier Analysis	3.16
3.5.2 Data Envelopment Analysis	3.23
3.5.3 Remarks on Efficiency Measurement Techniques	3.29
3.6 Strengths and Weakness of Data Envelopment Analysis (DEA)	3.32
3.7 Related Literature on Data Envelopment Analysis	3.34
3.8 Application of DEA	3.39
3.9 Total Factor Productivity Studies in Malaysia	3.47
3.10 Conclusion	3.56
4 Research Methodology	4.1
4.1 Introduction	4.1
4.2 Concept of Technical Efficiency	4.1
4.3 Data Envelopment Analysis (DEA)	4.10
4.4.1 Input-Oriented Technical Efficiency	4.11
4.4.2 Output-Oriented Technical Efficiency	4.17
4.4 The Malmquist TFP Index	4.20
4.5 The Productivity Model and Estimation	4.25
4.6 Definition of Variable and Source of Data	4.29
4.6.1 Value of output	4.30
4.6.2 Value Added	4.30
4.6.3 Value of Materials Purchased	4.31
4.6.4 Total Number of Persons Engaged	4.32
4.6.5 Value of Fixed Assets Owned as at End of Year.	4.32
5 Result and Discussion	5.1
5.1 Introduction	5.1
5.2 Output and Input Growth	5.2
5.3 Partial Productivity Analysis	5.7
5.4 Production Frontier and Technical Efficiency	5.11
5.5 Total Factor Productivities of Industries as a Whole	5.23
5.6 Total Factor Productivities of Individual Industries	5.28

6	Summary and Conclusion	6.1
6.1	Introduction	6.1
6.2	Overall Summary	6.1
6.3	Recommendations and Policy Implications	6.5
6.4	Conclusion	6.9
6.4	Implication for Future Research	6.10
	Bibliography	R-1
	Appendix	A-1
	Biodata of the Author	B-1

LIST OF TABLES

Table	Page
2.1 Contribution of Factors of Production	2..2
2.2 Contribution of GDP, TFP, Capital, and Labor to Economy Growth (%)	2.3
2.3 Relative Productivity Level (in 1995 constant prices US\$)	2.5
2.4 TFP Growth of the Manufacturing Sector, 1996-2000	2.7
2.5 Total Output, Added Value and Employment of the Manufacturing Sector	2.8
2.6 Share of Total Output and Added Value by Sub-sectors, 2000	2.9
2.7 Total Output and Employment Growth	2.11
2.8 Added Value and Sales Value per Employee in Export and Domestic-Oriented Industries	2.13
2.9 Labor Cost Competitiveness in Export and Domestic Industries (%)	2.15
2.10 Food Manufacturing Activities by Sub-sectors	2.20
2.11 Major Food Imports in Malaysia, 1990 and 1995 (RM ' 000)	2.23
2.12 Malaysia: Food Export and Import at current Price, 1960 – 2000 (Million Ringgit)	2.25
2.13 Total Output, Added Value and Employment for Food Processing Industry	2.28
2.14 Trend of Production and Value Added of The Food Processing Industry	2.31
2.15 Value Added Trend in Food Manufacturing Industry	2.33
2.16 Employment and Wage Paid in Food Manufacturing Industry (1983-2001)	2.35

2.17	Number of Approvals Granted for Manufacturing Projects (1997-2000)	2.36
2.18	Industrial Production Indices	2.37
3.1	A Comparison of the Main Approaches to Efficiency Productivity Measurement	3.31
4.1	Computing Productivity Ratio (output = volume, input = labor)	4.3
4.2	Computing TE, SE and TR _{CRS}	4.9
5.1	Trend in Production, Employment, Value Added, and Wage Rate of Food Manufacturing Industries, 1993-2000	5.4
5.2	Growth in Production, Employment, Wage Rate, Capital and Value Added, of Food Manufacturing Industries, 1993-2000	5.5
5.3	Factor Productivity of Food Manufacturing Industries, 1983-2000	5.9
5.4	Average Factor Productivity of Food Manufacturing Industries by Sector, 1983-2000	5.10
5.5	Average Technical Efficiency Index for Malaysian Food Industries, 1983-2000	5.13
5.6	Average Technical Efficiency Index by Sector for Malaysian Food Industries, 1983-2000	5.15
5.7	Average Scale Efficiency Index for Malaysian Food Industries, 1983-2000	5.18
5.8	Average Scale Efficiency Index by Sector for Malaysian Food Industries, 1983-2000	5.19
5.9	Average Pure Efficiency Index for Malaysian Food Industries, 1983-2000	5.21
5.10	Average Pure Efficiency Index by Sector for Malaysian Food Industries, 1983-2000	5.22
5.11	Number of Food Sub-sector with Total Factor Productivity Change Indices	5.24

5.12	Summary of Annual Means of Malmquist Index for Malaysian Food Manufacturing Industries, 1983-2000	5.25
5.13	Average Annual Rate of Productivity and Efficiency Change in Malaysia Food Industry 1983-2000	5.30
5.14	Cumulated Productivity and Efficiency Change in the Malaysian Food Manufacturing Industries, 1983-85, 1986-90, 1991-95 and 1996-2000	5.36
5.15	Cumulated Productivity and Efficiency Change in the Malaysian Food Manufacturing Industries, 1983-2000	5.41

LIST OF FIGURES

Figure	Page
3.1 Performance Criteria	3.2
3.2 Illustration of the Stochastic Frontier Model	3.19
3.3 Illustration of Data Envelopment Analysis	3.27
4.1 Graphic Illustration of Productivity Ratio	4.4
4.2 Graphic Illustration of Firms Productivity	4.5
4.3 A Production Frontier	4.7
4.4 CRS and VRS Production Frontier	4.9
4.5 Technical and Allocative Efficiencies Measures	4.13
4.6 Piece-wise Linear Convex Unit Isoquant	4.16
4.7 Output Oriented Technical Efficiency Measures	4.18
4.8 Construction of Reference Technology	4.29
5.1 Average Technical, Scale and Pure Efficiency Indices for Malaysian Food Manufacturing Industries, 1983-2000	5.23
5.2 Means of Malmquist TFP Index and its Components for Malaysian Food Manufacturing Industries, 1983-2000	5.26
5.3 Means of Efficiency Change Index and its Components for Malaysian Food Manufacturing Industries, 1983-2000	5.28
5.4 Efficiency Change, Technical Efficiency Change and TFP Changes indices for Meehon, Noodles and Related Products Sub-sector	5.31
5.5 Efficiency Change, Technical Efficiency Change and TFP Changes indices for Other Grain Milling Sub-sector	5.31

5.6	Efficiency Change, Technical Efficiency Change and TFP Changes Indices for Manufacture of Palm Oil Sub-sector	5.32
5.7	Cumulated Productivity and Efficiency Change in the Malaysian Food Manufacturing Industries	5.38
5.8	Average Cumulated Productivity and Efficiency Change in the Malaysian Food Manufacturing Industries, 1983-2000	5.43

LIST OF APPENDIES

Appendix	Page
I Past Studies Using DEA in Various Sector	A.1
II The Definition of the Sub-sector according to Malaysian Industrial Code (MIC)	A.27
III Annual Technical Efficiency of Malaysian Food Manufacturing Industries, 1983-2000	A.28
IV Annual Pure Efficiency of Malaysian Food Manufacturing Industries, 1983-2000	A.29
V Annual Scale Efficiency of Malaysian Food Manufacturing Industries, 1983-2000	A.30
VI Annual Efficiency Change of Malaysian Food Manufacturing Industries, 1983-2000	A.31
VII Annual Technical Efficiency Change of Malaysian Food Manufacturing Industries, 1983-2000	A.32
VIII Annual Pure Efficiency Change of Malaysian Food Manufacturing Industries, 1983-2000	A.33
IX Annual Scale Efficiency Change of Malaysian Food Manufacturing Industries, 1983-2000	A.34
X Annual Total Factor Productivity Change of Malaysian Food Manufacturing Industries, 1983-2000	A.35
XI Efficiency Change, Technical Efficiency Change and TFP Changes indices for Sub-sectors in Malaysian Food Manufacturing Industries	A.36

LIST OF ABBREVIATIONS

AE	Allocative Efficiency
ASEAN	Association of Southeast Asian Nation
BEA	Bureau of Economic Analysis
CES	Constant Elasticity of Substitution
CRS	Constant Returns to Scale
DEA	Data Envelopment Analysis
DMU	Decision Making Units
EE	Economic Efficiency
EFFCH	Efficiency Change
FAMA	Federal Agricultural Marketing Authority
FDI	Foreign Direct Investment
FIMA	Food Industries of Malaysia
GDP	Gross national Product
LP	Linear Programming
MAJUIKAN	National Fisheries Development Authority
MAJUTERNAK	National Livestock Development Authority
MARDI	Malaysian Agricultural Research and Development Institute
MIC	Malaysian Industrial Code
MIDA	Malaysian Industrial Development Authority
NAP3	Third National Agricultural Policy
NBER	National Bureau of Economic Research
NPC	National Productivity Center

OECD	Organization for Economic Co-operation and Development
OPP3	Third Outline Perspective Plan
PE	Pure Efficiency
PECH	Pure Efficiency Change
RM	Ringgit Malaysia
SE	Scale Efficiency
SECH	Scale Efficiency Change
SIRIM	Standard and Industrial Research Institute of Malaysia
SSL	Self Sufficiency Level
TE	Technical Efficiency
TECHCH	Technical Efficiency Change
TFP	Total factor Productivity
TFPCH	Total Factor Productivity Change
TFPG	Total factor Productivity Growth
VRS	Variable Returns to Scale